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**TITLE 327 WATER POLLUTION CONTROL BOARD**

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**FIRST NOTICE OF COMMENT PERIOD**

LSA Document #06-573

**DEVELOPMENT OF AMENDMENTS TO RULES CONCERNING E. COLI BACTERIA IN WATERS OF THE STATE****PURPOSE OF NOTICE**

The Indiana Department of Environmental Management (IDEM) is soliciting public comment on amendments to [327 IAC 2-1-6](#), [327 IAC 2-1.5-8](#), [327 IAC 5-2-11](#), [327 IAC 5-2-11.4](#), and [327 IAC 5-10-6](#) concerning the application of a single sample maximum limitation of 235 most probable number (mpn) or colony forming units (cfu)/100 ml of Escherichia coli (E. coli) bacteria to waters of the state. Specifically, the rulemaking will address compliance with the E. coli limits from wastewater effluent. Sample variability as well as the lack of precision of the current test method can make meeting the limit difficult. The rulemaking will focus on ways to modify rules to more accurately account for the effect of sample variability on compliance. IDEM seeks comment on the affected citations listed and any other provisions of Title 327 that may be affected by this rulemaking.

**CITATIONS AFFECTED:** [327 IAC 2-1-6](#); [327 IAC 2-1.5-8](#); [327 IAC 5-2-11](#); [327 IAC 5-2-11.4](#); [327 IAC 5-10-6](#).

**AUTHORITY:** [IC 13-14-9](#); [IC 13-18-3](#).

**SUBJECT MATTER AND BASIC PURPOSE OF RULEMAKING****Basic Purpose and Background**

All waters of the state in Indiana are designated for full body contact recreational use. In support of this designation, Indiana rules contain surface water quality criteria for E. coli bacteria that are in effect during the April through October recreational season. [327 IAC 2-1-6\(d\)](#) reads as follows:

"(d) This subsection establishes bacteriological quality for recreational uses. In addition to subsection (a), the criteria in this subsection are to be used to evaluate waters for full body contact recreational uses, to establish wastewater treatment requirements, and to establish effluent limits during the recreational season, which is defined as the months of April through October, inclusive. E. coli bacteria, using membrane filter (MF) count, shall not exceed:

- (1) one hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period; and
- (2) two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period.

If a geometric mean cannot be calculated because five (5) equally spaced samples are not available, then the criterion stated in subdivision (2) must be met."

[327 IAC 2-1.5-8\(e\)](#) reads as follows:

"(e) This subsection establishes bacteriological quality for recreational uses as follows:

- (1) In addition to subsection (b), the criteria in this subsection shall be used to:

- (A) evaluate waters for full body contact recreational uses;
- (B) establish wastewater treatment requirements; and
- (C) establish effluent limits during the recreational season, which is defined as the months of April through October, inclusive.

- (2) E. coli bacteria, using membrane filter (MF) count, shall not exceed:

- (A) one hundred twenty-five (125) per one hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period; and
- (B) two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period.

If a geometric mean cannot be calculated because five (5) equally spaced samples are not available, then the criterion stated in subdivision (2)(B) must be met."

The daily maximum, single sample effluent limitation for E. coli is included in National Pollutant Discharge Elimination System (NPDES) permits for most wastewater treatment plants. For a variety of reasons, many NPDES permits are appealed due to the expected inability to meet the single sample maximum limits for E. coli. The permittees feel the need to protect their legal rights with regard to noncompliance; yet, the many appeals have hindered permit renewals and created costly legal expenses for both IDEM and the affected permittees.

Due to the nature and limitations of bacterial sampling and analysis, it is not possible for operators of wastewater treatment facilities to ensure compliance with a single sample maximum at all times. Currently available testing methods are severely limited because they carry a significant likelihood of "false positive" noncompliance decisions based on single samples. This stems from the inherent spatial and temporal variability

of bacteria populations in treated effluents. In other words, the testing methods may produce falsely high values that could place facilities in noncompliance even when the wastewater treatment plant is being operated properly. Because of these limitations in the currently available/approved testing methods for *E. coli*, Congress is requiring EPA to develop a more accurate method to better assess bacterial water quality and support protection of recreational uses.

The present primary contact *E. coli* standard is based on research carried out by U.S. EPA in the early 1980s (U.S. EPA, Health Effects Criteria for Recreational Water, August 1984). In 1986, U.S. EPA recommended national *E. coli* standards for freshwater recreation based on those earlier studies. The standards included both a geometric mean value derived directly from the results of the research and single sample maximum value based on a theoretical statistical extrapolation from the research for varying levels of risk. Indiana adopted for all waterways the most stringent values, intended by U.S. EPA for designated bathing beaches.

In subsequent guidance documents and regulations, U.S. EPA has noted that the single sample maximum values were intended as a tool for beach managers to evaluate when beaches should be closed due to high bacteria values. EPA acknowledged some confusion in the application of the single sample maximum to permit limits and other compliance measures:

"The 'single sample maximum' values allow beach managers to quantitatively determine what an unacceptably high value is. The 'single sample maximum' was never to [sic] intended to be a 'value not to be exceeded' when referring to attainment decisions and National Pollutant Discharge Elimination System (NPDES) permitting under the Clean Water Act." (Implementation Guidance for Ambient Water Quality Criteria for Bacteria, November 2003 Draft).

"Other than in the beach notification and closure decision context, the geometric mean is the more relevant value for ensuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation, and more directly linked to the underlying studies on which the 1986 bacteria criteria were based." (Water Quality Standards for Coastal and Great Lakes Recreation Waters; November 16, 2004; FR 04-25303)

U.S. EPA gives states discretion in the use of single sample maximums in permit limits and recommends against determining compliance based upon a single sample. Therefore, if federal guidance related to bacterial water quality criteria does not require or support the use of a single sample maximum for determining compliance with NPDES permits, Indiana rules may be due for amendment.

In June 2003, U.S. EPA published a document, Bacterial Water Quality Standards for Recreational Waters, Freshwater and Marine Waters, Status Report, that provides an informative summary of state and tribal standards. Relevant parts of the report include: (1) Eighteen states, including Indiana, have adopted *E. coli* standards for freshwater; (2) Six states use enterococci for freshwater; (3) the other 26 states still use fecal coliforms or total coliforms; (4) most states (31 of 50) apply some type of data exclusion rule whereby 5 to 20 percent of the data can exceed some predetermined value.

The document demonstrated that most states determine a wastewater facility's NPDES permit compliance based upon the geometric mean of a minimum number of effluent samples, 7-day averages of samples, or by excluding a percent of the data due to testing method variability. Each of these approaches allows wastewater treatment operators to function within acceptable and protective permit parameters without being subject to noncompliance due to the variability inherent in *E. coli* testing results.

#### **Alternatives To Be Considered Within the Rulemaking**

Specifically, the rulemaking will address compliance with the *E. coli* limits from wastewater effluent. Sample variability as well as the lack of precision of the current test method can make meeting the limit difficult. The rulemaking will focus on ways to modify rules to more accurately account for the effect of sample variability on compliance. The following alternatives provide possibilities for modification of rules concerning the application of a single sample maximum limitation of 235 mpn or cfu/100ml of *E. coli* bacteria in waters of the state:

##### **Alternative 1.**

For NPDES permitted discharges of wastewater with effluent limitations based upon the criterion of 235 mpn or cfu per 100 milliliters, compliance with such effluent limitations shall be based upon a weekly average (geometric mean), not to exceed 235 mpn or cfu per 100 milliliters.

##### **Alternative 2.**

For NPDES permitted discharges of wastewater with effluent limitations based on the criterion of 235 mpn or cfu per 100 milliliters, compliance with such effluent limitations shall be based upon not more than 10% of the discharge samples exceeding such criterion during a 30 day period.

##### **Alternative 3.**

IDEM will consider each of these alternatives as well as some combination of each of these alternatives. IDEM is also considering options for clarification of approved test methodologies. The rulemaking may also consider sampling approaches that might grant allowances to small communities and intermittent dischargers.

#### **Applicable Federal Law**

The Clean Water Act allows states to establish water use designations. Indiana has designated all waters of the state to be full body contact recreational use. As stated in the preamble to the Beach Act rule, one of the

considerations EPA uses in reviewing state water quality standards submissions related to bacteria criteria for coastal recreation waters is whether or not those standards include not only a geometric mean but also appropriate single sample maximums (SSMs) for all coastal recreation waters. The Beach Act rule was not intended to constrain the states included in the rule in how they could use SSM values in the context of Clean Water Act implementation programs such as the Total Maximum Daily Load program and the National Pollutant Discharge Elimination System (NPDES) program. EPA expects those states adopting their own water quality standards as protective of human health as EPA's 1986 bacteria criteria to use the SSM to make short term decisions in the beach monitoring and notification context. States adopting their own water quality standards have the flexibility to determine how to use the SSM in other Clean Water Act programs.

The suggested alternatives are not imposed by federal law.

#### **Potential Fiscal Impact**

Cost associated with potential additional impacts to water quality is expected to be zero as water quality will not be affected.

Cost savings to affected permittees and IDEM due to reduction in permit appeals are estimated to exceed \$2,000,000 (based on an average \$100,000 of savings per permit appeal for 20 affected parties).

Cost savings in reduction of noncompliance events are not subject to estimation at this time.

Cost savings in reduction of enforcement activity are not subject to estimation at this time.

#### **Small Business Assistance Information**

IDEM established a compliance and technical assistance (CTAP) program under [IC 13-28-3](#). The program provides assistance to small businesses and information regarding compliance with environmental regulations. In accordance with [IC 13-28-3](#) and [IC 13-28-5](#), there is a small business assistance program ombudsman to provide a point of contact for small businesses affected by environmental regulations. Information on the CTAP program, the monthly CTAP newsletter, and other resources available can be found at [www.in.gov/idem/ctap](http://www.in.gov/idem/ctap).

Small businesses affected by this rulemaking may contact the Small Business Regulatory Coordinator:

Sandra El-Yusuf  
IDEM Compliance and Technical Assistance Program  
OPPTA - MC60-04  
100 N. Senate Avenue, W-041  
Indianapolis, IN 46204-2251  
(317) 232-8578  
[selyusuf@idem.IN.gov](mailto:selyusuf@idem.IN.gov)

The Small Business Assistance Program Ombudsman is:

Stacey Pfeffer  
Office of Voluntary Compliance  
OPPTA - MC60-04  
100 N. Senate Avenue, W-041  
Indianapolis, IN 46204-2251  
(317) 233-5624  
[spfeffer@idem.IN.gov](mailto:spfeffer@idem.IN.gov)

#### **Public Participation and Workgroup Information**

An external workgroup has met to discuss issues involved in this rulemaking. The workgroup is made up of IDEM staff, representatives of the various affected stakeholders, notably municipal NPDES permittees and consultants, and representatives of the environmental community. The workgroup intends to continue meeting after publication of this first notice and through the rule adoption process.

If you wish to provide comments to the workgroup on the rulemaking, attend meetings, or have suggestions related to the workgroup process, please contact MaryAnn Stevens, Rules Section, Office of Water Quality at (317) 232-8635 or (800) 451-6027 (in Indiana). Please provide your name, phone number, and e-mail address, if applicable, where you can be contacted. The public is also encouraged to submit comments and questions to members of the workgroup who represent their particular interests in the rulemaking.

#### **STATUTORY AND REGULATORY REQUIREMENTS**

[IC 13-14-8-4](#) requires the board to consider the following factors in promulgating rules:

- (1) All existing physical conditions and the character of the area affected.
- (2) Past, present, and probable future uses of the area, including the character of the uses of surrounding areas.
- (3) Zoning classifications.
- (4) The nature of the existing air quality or existing water quality, as the case may be.
- (5) Technical feasibility, including the quality conditions that could reasonably be achieved through coordinated control of all factors affecting the quality.
- (6) Economic reasonableness of measuring or reducing any particular type of pollution.
- (7) The right of all persons to an environment sufficiently uncontaminated as not to be injurious to human,

plant, animal, or aquatic life or to the reasonable enjoyment of life and property.

#### **REQUEST FOR PUBLIC COMMENTS**

At this time, IDEM solicits the following:

- (1) The submission of alternative ways to achieve the purpose of the rule.
- (2) The submission of suggestions for the development of draft rule language.

Mailed comments should be addressed to:

#06-573(WPCB) [E. coli Rule]  
MaryAnn Stevens Mail Code 65-40  
Rules Section  
Office of Water Quality  
Indiana Department of Environmental Management  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2251.

Hand delivered comments will be accepted by the receptionist on duty at the twelfth floor reception desk, Office of Water Quality, Indiana Government Center-North, Room N1255, 100 North Senate Avenue, Indianapolis, Indiana. Comments also may be submitted by facsimile to (317) 232-8406, Monday through Friday, between 8:15 a.m. and 4:45 p.m. Please confirm the timely receipt of faxed comments by calling the Office of Water Quality, Rules Section at (317) 233-8903. Please note it is not necessary to follow a faxed comment letter with a copy of the letter submitted through the postal system.

#### **COMMENT PERIOD DEADLINE**

Comments must be postmarked, faxed, or hand delivered by February 3, 2007.

Additional information regarding the NPDES program and discharge permit limits for E. coli may be obtained from Catherine Hess, Permits Technical Support Section Chief, Office of Water Quality, (317) 232-8704 or (800) 451-6027. Additional information regarding this rulemaking action may be obtained from MaryAnn Stevens, Rules Section, Office of Water Quality, (317) 232-8635 or (800) 451-6027 (in Indiana).

Bruno Pigott  
Assistant Commissioner  
Office of Water Quality

*Posted: 12/20/2006 by Legislative Services Agency*  
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